

Design Memorandum No. 03-2004

TO: Engineering Offices and Divisions
Districts
Consulting Engineers

FROM: Mark S. Gaydos, P.E. - Design Engineer
/s/

DATE: September 22, 2004

SUBJECT: ADAAG DETECTABLE WARNINGS
(TRUNCATED DOMES)

Design Manual Reference:

Section III-21.08

____ Revision

____ ° Supplemental

Introduction

The memorandum provides guidance on Truncated Domes for projects that require the construction of new curb ramps or retrofit to existing curb ramps.

Implementation

The use of this guidance is to be implemented immediately. This design memo does not apply to projects bid prior to June 18, 2004 with a “Detectable Warning Panel” bid item. This design memo replaces *Design Memorandum No. 10-2003*.

Truncated domes are the standard design requirement for detectable warnings for determining the boundary between the sidewalk and street by visually impaired people. They have a unique design that can be detected underfoot and with a cane. Truncated domes are the only detectable warnings allowed by the Americans with Disabilities Act Accessibility Guidelines (ADAAG). Grooves, exposed aggregate and other designs intended for use as detectable warnings are too similar to pavement textures, cracks, and joints.

Guidance

To comply with the American with Disabilities Act (ADA), all state and local agencies are required to utilize truncated domes on new and existing curb ramps, as follows:

1. Types of work that are considered to be New Construction or Reconstruction Projects:¹
 - Grade and Surfacing
 - Structures: new, replacement and rehabilitation
 - Widening or realignment of a roadway/shoulders
 - Traffic Control Devices: Signalization

¹ Department of Justice Joint Final Rule on Detectable warnings and suspensions, Nov. 1998.
<<http://www.access-board.gov>> pick Publications, under Facilities pick Detectable Warnings: Final Rule.

- Rest Area projects
- 2. Major and Minor Rehabilitation Projects such as:
 - Bituminous or Concrete overlay's and/or milling projects that improve the structural components of the roadway. (greater than 2-inches overlay, excluding rutfilling)
 - Major Concrete Pavement Repair/Dowel Bar Retrofit
 - Intersection improvements: adding turn lanes
 - Safety improvements and/or enhancements
- 3. All projects where constructing or altering curb ramps or otherwise affecting the mobility of pedestrians.

Preventive Maintenance Projects: such as: crack sealing, patching, sealing, re-striping, or overlays less than or equal to 2 inches, minor concrete pavement repair are considered maintenance and do not require modifications of curb ramps and/or truncated domes.

Specifications²

Detectable warnings shall consist of a surface of truncated domes aligned in a square grid pattern.

Dome Size - Truncated domes in a detectable warning surface shall have a base diameter of 0.9 inch minimum to 1.4 inches maximum, a top diameter of 50% of the base diameter minimum to 65% of the base diameter maximum, and a height of 0.2 inches.

Dome Spacing - Truncated domes in a detectable warning surface shall have a center-to-center spacing of 1.6 inches minimum and 2.4 inches maximum and a base-to-base spacing of 0.65 inches minimum measured between the most adjacent domes on the square grid.

Dome Alignment – Domes shall be aligned on a square grid in the predominant direction of travel.

Contrast - Detectable warning surfaces shall contrast visually with the adjacent walking surfaces by having light on dark or dark on light.

Size - Detectable warning surfaces shall extend 24 inches in the direction of travel and the full width of the curb ramp landing.

Location (see Standard D-750-2):

1. Curb ramps and blended transitions: The detectable warning surface shall be located so that the nearest edge is 6" minimum and 8" maximum from the face of the curb.

² Guidelines for Accessible Public Rights-of-Way, <<http://www.access-board.gov>> pick Publications, under Public Right-of-Way pick Building a True Community: Accessible Public Rights-of-Way, pick Part III.

2. Medians and Pedestrian Refuge Islands: Medians and refuge islands shall have detectable warnings. Detectable warnings at cut-through islands shall be separated by 24-inch minimum length of walkway without detectable warnings. EXCEPTIONS: Detectable warnings shall not be required on cut through islands where the crossing is controlled by signals and is timed for full crossing.

3. Railroad Crossing: Detectable warnings shall be located at the outside of each group of tracks that cross a pedestrian access route. The detectable warning surface shall be located so that the edge nearest the rail crossing is 6" minimum and 8" maximum from the vehicle dynamic envelope (the clearance required for a rail vehicle and its cargo overhand due to any combination of loading, lateral motion, or suspension failure). Where the pedestrian access route crosses the rail system at grade, the surface of the pedestrian access route shall be level and flush with the top of the rail at the outer edge and between rails.

Approved Manufactures:

Enclosed are two plans notes that identify approved truncated dome products for use on new construction or retrofit to existing curb ramps.

1) New Construction of curb ramps:

DETECTABLE WARNING PANELS – NEW CONSTRUCTION: Following is an approved supplier list for detectable warning panels used for newly constructed curb ramps, referred to as cast-in-place panels.

- 1) CastinTact Tactile Warning Panels by Masco (800-537-3407)
<http://www.masco.net/castintact>
- 2) Armor-Tile Tactile Systems by Engineered Plastics, Incorporated (800-682-2525)
<http://www.armor-tile.com>
- 3) Detectable Warning Paver by Hanover Architectural Products (800-426-4242)
<http://www.hanoverpavers.com/html/detectable.html>
- 4) Composite Paver Inline Dome Tile by ADA Tactile Systems (800-372-0519)
<http://www.adatile.com>

The Detectable Warning Panels shall have a minimum size of 1' x 2'. The panels shall be safety yellow color throughout the panel and consist of a surface of truncated domes aligned in a square grid pattern.

Dome Size - Truncated domes in a detectable warning surface shall have a base diameter of 0.9 inch minimum to 1.4 inches maximum, a top diameter of 50% of the base diameter minimum to 65% of the base diameter maximum, and a height of 0.2 inches.

Dome Spacing - Truncated domes in a detectable warning surface shall have a center-to-center spacing of 1.6 inches minimum and 2.4 inches maximum and a base-to-base spacing of 0.65 inches minimum measured between the most adjacent domes on the square grid.

Dome Alignment – Domes shall be aligned on a square grid in the predominant direction of travel.

Size - Detectable warning surfaces shall extend 24 inches in the direction of travel and the full width of the curb ramp landing.

The detectable warning surface shall be located so that the nearest edge is 6" minimum and 8" maximum from the face of the curb.

The panel will be installed according to the manufactures recommendations. All costs for labor, material, and equipment shall be included in the price bid for “Detectable Warning Panels”.

2) Retrofit on existing curb ramps:

DETECTABLE WARNING PANELS - RETROFIT: Following is an approved supplier list for detectable warning panels used in existing curb ramps, which would need the panels installed by a retrofit method.

- 1) Armor-Tile Tactile Systems by Engineered Plastics, Incorporated (800-682-2525)
<http://www.armor-tile.com>
- 2) Composite RTF Tactile Warning Tile Specifications by Transit-Tile
(888-279-7964) <http://www.transit-tile.com>
- 3) Composite Inline Dome Tile by ADA Tactile Systems (800-372-0519)
<http://www.adataile.com>

The Detectable Warning Panels shall have a minimum size of 1' x 2'. The panels shall be safety yellow color throughout the panel and consist of a surface of truncated domes aligned in a square pattern. The panels shall have a maximum thickness of 1/8”.

Dome Size - Truncated domes in a detectable warning surface shall have a base diameter of 0.9 inch minimum to 1.4 inches maximum, a top diameter of 50% of the base diameter minimum to 65% of the base diameter maximum, and a height of 0.2 inches.

Dome Spacing - Truncated domes in a detectable warning surface shall have a center-to-center spacing of 1.6 inches minimum and 2.4 inches maximum and a base-to-base spacing of 0.65 inches minimum measured between the most adjacent domes on the square grid.

Dome Alignment – Domes shall be aligned on a square grid in the predominant direction of travel.

Size - Detectable warning surfaces shall extend 24 inches in the direction of travel and the full width of the curb ramp landing.

The detectable warning surface shall be located so that the nearest edge is 6" minimum and 8" maximum from the face of the curb.

The panel will be installed according to the manufactures recommendations. All costs for labor, material, and equipment shall be included in the price bid for "Detectable Warning Panels – Retrofit".

Questions

Any questions regarding the content or implementation of the memorandum should be referred to Ron Henke, Design Division, 701-328-4445.

Approved

Signed

Francis G. Ziegler, P.E. - Director, Office of Project Development

9/22/04

Date